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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,200	07/09/2003	Paul Lawheed	8639	9690
7590	08/12/2005		EXAMINER	
Mr. Lynn G. Foster 602 E. 300 S. Salt Lake City, UT 84102			DIAMOND, ALAN D	
			ART UNIT	PAPER NUMBER
			1753	
DATE MAILED: 08/12/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/616,200

Applicant(s)

LAWHEED

Examiner

Alan Diamond

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on June 28, 2005 & July 5, 13, and 28, 2005.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Comments

1. The objection to the drawings has been overcome by Applicant's amendment of the specification.
2. The objection to the specification has been overcome by Applicant's amendment thereof.
3. The Examiner acknowledges that the claim language suggested by the Examiner is present in the amendment of the claims.
4. The rejections of the claims under 35 USC 112, second paragraph, have been overcome by Applicant's amendment of the claims, other than those rejections that are set forth below.

Claim Objections

5. Claims 10 and 12 are objected to because of the following informalities: In claim 10, at line 2, the word "angle" has both underlining and strikethrough, i.e., the "ular" that has been crossed out should not be underlined. In claim 12, at line 1, double bracketing should be used to delete the term "9" since it is difficult to see the strikethrough of said term "9". Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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7. Claims 1-8, 18-20, 29-31, 34, 35, and 37 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claim 1 at line 6, and in claim 33 at line 4, the recitation "light transparent material" is not supported by the specification, as originally filed. The specification does teach a "light transmitting synthetic resinous envelope 42" at page 10, lines 10 and 14-15, of the instant specification. However, a light transmitting synthetic resinous envelope is not sufficient support for any light transparent material

In claim 18, at line 1, the term "vertically shallow" is not supported by the specification, as originally filed. The same applies to dependent claims 19 and 20.

In claim 18, at lines 2-3, the recitation "which does not project into the air" is not supported by the specification, as originally filed. All of the devices shown in the instant specification are three dimensional devices, and thus, there has to be projection into the air. The same applies to dependent claims 19 and 20.

In claim 18, at lines 5-6, the recitation "supported upon and in close relation to a support surface at multiple spaced locations" is not supported by the specification, as originally filed. In particular, the "multiple locations" is not supported by the specification, as originally filed. The same applies to dependent claims 19 and 20.

In claim 29, at line 4, the term "in flat relation on a vertically narrow support" is not supported by the specification, as originally filed. The same applies to dependent claims 30 and 31.

In claim 34, at lines 2-3, the term "which does not project significantly into the air" is not supported by the specification, as originally filed.

In claim 34 at line 5, the term "multiple spaced locations" is not supported by the specification, as originally filed.

In claim 35, at line 5, the term "multiple locations" is not supported by the specification, as originally filed.

In claim 37, at line 5, the range "at least one" for the optical sensor is not supported by the specification, as originally filed.

In claim 37, at line 7, the range "at least one" for the control is not supported by the specification, as originally filed.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 18-20, 21-32, and 34-37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 18, at line 1, the term "vertically shallow" is indefinite because it is subjective. The same applies to dependent claims 19 and 20.

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In claim 20, at line 2, the term "low vertical profile" is subjective. It is not clear how low the vertical profile must be in order to be considered to have a "low vertical profile".

In claim 21, at line 4, the term "short vertical distance" is indefinite because it is subjective. The same applies to dependent claims 22-24.

In claim 25, at line 2, the term "low profile" is indefinite because it is subjective. The same applies to dependent claims 26-28 and 32.

In claim 29, at line 4, the term "vertically narrow support" is indefinite because it is subjective. The same applies to dependent claims 30 and 31.

In claim 34, at lines 2-3, the term "which does not project significantly into the air" is indefinite because it is subjective.

In claim 35, at line 3, the term "short vertical distance" is indefinite because it is subjective.

In claim 36, at line 2, the term "low profile" is indefinite because it is subjective.

In claim 37, at line 4, the term "vertically narrow support" is indefinite because it is subjective.

Applicant cites the dictionary definitions of "profile", "high" and "low" and argues that "low profile", in the context of the present invention, is a category and art distinct and separate from "high profile" solar converters "as in Feustel [et al] (DE 3005876)." Applicant argues that "during high wind conditions, 'high profile' tractor rigs are denied access to a high speed highway while 'low profile' vehicles, such as automobiles are allowed to travel on the highway, notwithstanding high wind conditions." However,

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these argument are not deemed to be persuasive because it is not clear how "low" the profile must be in order to be considered "low profile". It is not clear where the exact division is between low and high profile, and thus, the invention has not been particularly pointed out and distinctly claimed. With regard to Feustel et al, a skilled artisan is not limited to any particular height in preparing the Feustel et al device, and can prepare the device having "high" or "low" height. Where the cutoff is between "low" and "high" is subjective.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claim 33 is rejected under 35 U.S.C. 102(b) as being anticipated by Huschka et al (U.S. Patent 4,869,755).

Huschka et al teaches a flat plate converter, i.e., solar cell module (10) having a one piece encapsulation layer, which can be considered to be reference sign (12) or reference sign (14), or the combination of reference signs (12) and (14) made of light transparent material contiguously and collectively peripherally surrounding the flat plate panel converter (see the figure; and col. 2, line 61 through col. 4, line 29). Since

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Huschka et al teaches the limitations of the instant claim, the reference is deemed to be anticipatory.

12. Claims 34-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Sasaki (U.S. Patent 6,617,506). None of claims 34-36 is fully supported by parent applications 10/458,917, 10/251,709, and 09/867,196. Accordingly, said claims 34-36 have a U.S. filing date of 07/09/2003. Sasaki has a 102(e) date of 02/20/2002.

Sasaki's power generation equipment includes a flat plate panel sunlight-to-electricity converter, i.e., solar cell pane (11) that is supported with support members (6,7) upon support surface (1), and continuous automatic multiple axis, e.g., biaxial tracking as here claimed (see Figures 1, 4, and 6-11; col. 2, lines 11-45; and col. 3, line 35 through col. 5, line 18). Since Sasaki teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

13. Claims 34-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Moore (U.S. Patent 4,649,899).

Moore teaches a flat plate panel collector (10) that can convert sunlight into electricity mounted on support surface (22), wherein said collector (10) tracks the sun by rotation about vertical and horizontal axes, and wherein optical sensors, i.e. solar cell sensors (24,27,29) are used to send signals to a controls, as seen in Moore's Figure 3 (see also Figures 1 and 2; col. 1, lines 17-20; and col. 2, line 16 through col. 4, line 68). Since Moore teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

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14. Claims 34-37 are rejected under 35 U.S.C. 102(e) as being anticipated by Shibata et al (6,465,725). None of claims 34-37 is fully supported by parent applications 10/458,917, 10/251,709, and 09/867,196. Accordingly, said claims 34-36 have a U.S. filing date of 07/09/2003. Shibata et al has a 102(e) date of 07/31/2001.

Shibata et al's tracking photovoltaic power generator has solar panel (12), sensor (18) and controller (20), as here claimed (see Figures 3-5; and col. 2, line 17 through col. 6, line 44). Since Shibata et al teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

15. Claims 34-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Phelan et al (U.S. Patent 6,005,236).

Phelan et al's automatic tracking apparatus has a solar panel mounted to frame (14) at multiple locations; light sensor (22); and controller (20) (see Figure 1 and 2; and col. 8, line 35 through col. 13, line 30). Since Phelan et al teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

16. Claim 33 is rejected under 35 U.S.C. 102(b) as being anticipated by JP 56-12781, herein referred to as JP '781.

JP '781 teaches a flat plate panel converter (3); and a one piece encapsulation layer (1') comprising light transparent material contiguously and collectively peripherally surrounding said flat plate panel converter (see Figure 4; and the entire JP '781 document). Since JP '781 teaches the limitations of the instant claim, the reference is deemed to be anticipatory.

17. Claim 33 is rejected under 35 U.S.C. 102(b) as being anticipated by JP 56-69874, herein referred to as JP '874.

JP '874 teaches a flat plate panel converter (13); and a one piece encapsulation layer (14) comprising light transparent material contiguously and collectively peripherally surrounding said flat plate panel converter (see Figures 4 and 5; and the entire JP '874 document). Since JP '874 teaches the limitations of the instant claim, the reference is deemed to be anticipatory.

18. Claims 1-8 and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Kravitz (U.S. Patent 4,106,952)

With respect to claims 1-8 and 33, Kravitz teaches a solar panel unit that has flat plate panel converter (7); cooling mechanism comprising serpentine (metal) pipe (17); a thermally conductive metal sheet (15) disposed above the pipe; a dielectric and thermally conducting layer (8) between the converter (7) and the pipe (17); thermal insulation (23) surrounding the pipe (17); and vacuum space (see Figure 1; col. 2, line 6 through col. 3, line 29; and col. 5, lines 22-38). As seen in Figure 1, Kravitz's side walls (4) and bottom wall (3) are one piece. The transparent glass (5) is sealingly connected to the side walls (4) to form a hermetically sealed enclosure (see col. 2, lines 6-31). Since the glass (5) is sealingly connected to the side walls (4), the encapsulating seal including side walls (4), bottom wall (3) and glass (5) are a one piece layer, as here claimed. In other words, since side walls (4), bottom wall (3) and glass (5) are all connected, they form a one piece layer. Clearly as seen in Figure 1, the side walls (4), bottom wall (3) and glass (5) contiguously and collectively surround the periphery of the

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flat plate panel converter and the cooling mechanism. Since Kravitz teaches the limitations of the instant claims, the reference is deemed to be anticipatory.

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claims 9-11 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy (U.S. Patent 4,235,221) in view of Dodge (U.S. Patent 4,316,448).

With respect to claims 9 and 11, Murphy teaches a solar energy apparatus (61) comprising a flat panel converter, i.e., solar cell array (79), having a top upon which light is impinged, the solar cells converting light to electricity; and a cooling mechanism disposed next to the solar cells away from the sun and comprising fluid tubes (67) (i.e., a fluid passageway) beneath the solar cells (79) so as to cool the solar cells, i.e., to dissipate heat created at the solar cells (see Figure 5; and col. 8, line 9 through col. 9, line 46).

With respect to claim 13, there is a thermally conductive metal sheet (69) disposed above the metal tubes (67) (see Figure 5; and col. 8, lines 23-26).

With respect to claim 14, there is an electrical insulation layer (78) (i.e., a dielectric layer) between the tubes (67) and the solar cell array (79), said insulation layer (78) permitting heat transfer (i.e., is thermally conducting) (see col. 8, lines 51-56;

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and col. 9, lines 19-26). This electrical insulation layer (78) corresponds to the bi-functional material in claim 29.

With respect to claim 15, thermoelectric elements and their associated layers (71,74,70,73) correspond to the instant support layer superimposed over the tubes (67) (see Figure 5).

Murphy teaches the limitations of the instant claims other than the difference which is discussed below.

With respect to claim 9 and its dependent claims and with respect to claim 10, Murphy lacks the instant sunlight concentrator, wherein the sunlight concentrator comprises at least two opposed upwardly diverging angular mirrors disposed peripherally to the surface of Murphy's apparatus. Dodge teaches a solar energy converter system comprising flat plate solar panel (14), and solar concentrator (12) extending angularly skyward away from a peripheral location adjacent to the surface of the solar panel (14) (see Figures 1, 2, 5 and 6; and col. 2, line 25 through col. 4, line 3). Looking at Dodge's Figure 2, rays of sunlight offset from but adjacent to the surface of panel (14) will be deflected by the concentrator (12) against the surface of the panel (14). The concentrator (12) can most certainly set at a fixed angle, such as the angle seen in Figure 2. The concentrator (12) is clearly offset from the solar panel (14), as seen in Dodge's Figure 2, and is rigidly affixed to the solar panel (14) using strip member (24) or by using the embodiments seen in Figure 3 and 4 (see also col. 2, lines 54-63). Dodge's solar energy concentrator system provides the advantage of increasing the intensity of solar energy on collecting surfaces (see col. 1, lines 6-11). It

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would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided Dodge's concentrator at the periphery of Murphy's solar energy apparatus (61) so as to increase the intensity of solar energy on collecting surfaces of said apparatus.

21. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy in view of Dodge as applied to claims 9-11 and 13-15 above, and further in view of Takaoka (U.S. Patent 4,493,940).

Murphy in view of Dodge, as relied upon for the reasons recited above, teaches the limitations of the instant claim 12, the differences being that Murphy does not specifically teach that its thermal collecting tubes (67) are serpentine. However, this feature is conventional in the art. Takaoka teaches a zigzag, i.e., serpentine heat collecting tube (7) beneath its solar cells (9) (see col. 2, lines 32-65; and Figures 3 and 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided Murphy's thermal collecting tubes (67) in a serpentine shape because this feature is conventional in the art, as shown by Takaoka

22. Claims 16-29, 31, 32 and 34-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy in view of Dodge as applied to claims 9-11 and 13-15 above, and further in view of Feustel et al (DE 3005876 A1).

Murphy in view of Dodge is relied upon for the reasons recited above. Murphy additionally teaches that the solar energy apparatus (61) can be continuously directed toward the sunlight during the daytime, i.e., kept essentially perpendicular to the rays of sun by adjusting position along horizontal axle (55), as well as rotating platform (37),

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i.e., multiple axes tracking (see col. 7, lines 22-42; and Figures 1, 3, and 4). Murphy in view of Dodge teaches the limitations of claims 16-29, 31, 32, and 34-37, the difference being that Murphy does not specifically teach automatic tracking of the sun and inverting the solar energy apparatus during times of low and no sunlight to protect its surface, as well as the surface of the solar concentrators. Feustel et al teaches solar cells mounted on a frame, wherein the structure made be positioned facing downward to avoid dust accumulation, dew at night, or water and snow accumulations (see the attached English abstract; and the entire Feustel et al German document). Feustel et al's device tracks the sun automatically using light detector (21) and control circuit (20) (see the entire Feustel document. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provided the solar energy apparatus of Murphy in view of Dodge with the solar tracking capabilities taught by Feustel so that it could be positioned facing downward so as to avoid dust accumulation, dew at night, or water and snow accumulations, as taught by Feustel et al, and so as to automatically track the sun.

23. Claims 1-8, 30, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murphy in view of Dodge and further in view of Feustel et al as applied to claims 16-29, 31, 32 and 34-37 above, and further in view of Kravitz (U.S. Patent 4,106,952).

Murphy in view of Dodge and further in view of Feustel et al, as relied upon for the reasons recited above, teaches the limitations of claims 1-8, 30, and 33, the difference being that Murphy does not specifically teach the instant one piece

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encapsulation layer, in particular a light transmitting envelope encapsulating the solar energy converter in a hermetically sealed, evacuated manner. However, such encapsulation is conventional in the art. In particular, Kravitz teaches a solar panel unit that has flat plate panel converter (7); cooling mechanism comprising serpentine (metal) pipe (17); a thermally conductive metal sheet (15) disposed above the pipe; a dielectric and thermally conducting layer (8) between the converter (7) and the pipe (17); thermal insulation (23) surrounding the pipe (17); and vacuum space (see Figure 1; col. 2, line 6 through col. 3, line 29; and col. 5, lines 22-38). As seen in Figure 1, Kravitz's side walls (4) and bottom wall (3) are one piece. The transparent glass (5) is sealingly connected to the side walls (4) to form a hermetically sealed enclosure (see col. 2, lines 6-31). Since the glass (5) is sealingly connected to the side walls (4), the encapsulating seal including side walls (4), bottom wall (3) and glass (5) are a one piece layer, as here claimed. In other words, since side walls (4), bottom wall (3) and glass (5) are all connected, they form a one piece layer. Clearly as seen in Figure 1, the side walls (4), bottom wall (3) and glass (5) contiguously and collectively surround the periphery of the flat plate panel converter and the cooling mechanism. Furthermore, the side walls (4) can be made of glass, and thus, since the side walls (4) and the bottom wall (3) can be one piece, then the bottom wall (3) can also be made from glass (see col. 5, lines 39-46). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have replaced Murphy's housing seen in Murphy's Figure 5 with a one piece encapsulation that hermetically seals because such encapsulation is conventional in the art, as shown by Kravitz.

Response to Arguments

24. Applicant's arguments filed June 28, 2005 and July 13, 2005 have been fully considered but they are not persuasive.

Applicant argues that "[b]ecause flotation and buoyance are required, Murphy's solar systems cannot be used directly with houses or on land and cannot, as a matter of obviousness be adapted for non-flotation use." However, this argument is not deemed to be persuasive because Murphy's solar cell array (79) is flat panel as here claimed. The additional features of Murphy are certainly not excluded by the "comprising" language of the instant claims.

Applicant argues that Murphy limits his solar collectors to either thermal or electrical but not a combination of the two. However, this argument is deemed to be persuasive because Murphy teaches a solar cell array (79) having a top upon which light is impinged, the solar cells converting light to electricity; and a cooling mechanism disposed next to the solar cells away from the sun and comprising fluid tubes (67) (i.e., a fluid passageway) beneath the solar cells (79) so as to cool the solar cells, i.e., to dissipate heat created at the solar cells. In other words, Murphy teaches the claimed flat plate panel converter and cooling mechanism.

Applicant argues that collectors 9 and 9' of Figures 1 and 2 of Murphy do not rotate, and that platform (31) per se does not rotate. However, this argument is not deemed to be persuasive because Murphy teaches that the solar energy apparatus (61) can be continuously directed toward the sunlight during the daytime, i.e., kept essentially perpendicular to the rays of sun by adjusting position along horizontal axle

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(55), as well as rotating platform (37), i.e., multiple axes tracking (see col. 7, lines 22-42; and Figures 1, 3, and 4).

Applicant argues that Murphy is silent as to exactly what each solar collector (36) consists of. However, this argument is not deemed to be persuasive because, as noted above, Murphy teaches a solar cell array (79) having a top upon which light is impinged, the solar cells converting light to electricity; and a cooling mechanism disposed next to the solar cells away from the sun and comprising fluid tubes (67) (i.e., a fluid passageway) beneath the solar cells (79) so as to cool the solar cells, i.e., to dissipate heat created at the solar cells.

Applicant argues that Murphy teaches manual adjustment of its collectors. However, this argument is not deemed to be persuasive because automatic tracking of the sun is conventional in the art, as shown by Feustel et al.

Applicant argues that the embodiment of Murphy's Figures 8 and 9 is fundamentally irrelevant. However, this argument is not deemed to be persuasive because, as noted above Murphy teaches a solar cell array (79) having a top upon which light is impinged, the solar cells converting light to electricity; and a cooling mechanism disposed next to the solar cells away from the sun and comprising fluid tubes (67) (i.e., a fluid passageway) beneath the solar cells (79) so as to cool the solar cells, i.e., to dissipate heat created at the solar cells.

Applicant argues that the reflectors (12) of Dodge do not rotate, and the flat panels (14) remain in a fixed position. However, this argument is not deemed to be persuasive because Murphy teaches that the solar energy apparatus (61) can be

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continuously directed toward the sunlight during the daytime, i.e., kept essentially perpendicular to the rays of sun by adjusting position along horizontal axle (55), as well as rotating platform (37), i.e., multiple axes tracking (see col. 7, lines 22-42; and Figures 1, 3, and 4). The Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided Dodge's concentrator at the periphery of Murphy's solar energy apparatus (61) so as to increase the intensity of solar energy on collecting surfaces of said apparatus.

Applicant argues that Takaoka provides very little instruction of any particular relevance to the present invention. However, this argument is not deemed to be persuasive because Takaoka has been relied upon by the Examiner so as to show the conventionality of a serpentine heat collecting tube.

Applicant argues that Takaoka does not disclose a one-piece sealing layer circumscribing the entire panel. However, this argument is not deemed to be persuasive because the Examiner has relied upon Kravitz to show this feature. This feature is also shown by Huschka et al, JP '781, and JP '874.

Applicant argues that Feustel et al projects from a single mounting location upward into the air, stacks one solar section on top of another and provides a huge area highly vulnerable to certain adverse weather conditions, including wind forces.

Applicant argues that Feustel et al is a "high profile" device. However, these arguments are not deemed to be persuasive. Firstly, Feustel et al is mounted is more than one location as seen in Figure 1 where there are at least 4 or 5 supports below reference sign (14). Each support is a different location. Secondly, while it is acknowledged that

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independent claims 18, 21, 25, 29, 34, and 36 recite language such as "vertically shallow", "a short vertical distance", "low profile", "vertically narrow support", this language does not distinguish over Feustel et al. Feustel et al is not limited to any particular vertical height for its support and tracking frame, and a skilled artisan could make Feustel et al's support and tracking frame as "low" or "high" as is needed or desired. Thirdly, with respect to adverse weather conditions, nothing unexpected has been demonstrated with respect to what is shown in Feustel et al or Murphy.

Applicant cites In re Payne and argues that Feustel et al lacks an enabling disclosure with respect to its electronic tracking circuit. However, this argument is not deemed to be persuasive because Feustel et al clearly teaches the use of a light sensitive cell (21) that measures incident light and controls the electronic tracking circuit (20) used to orient the frame drive so the individual solar cells (11) of each module (10) (see the entire document). It should be noted that Regnier et al (U.S. Patent 2,913,583) published in 1959 well before Feustel et al (which published in 1981) and shows a solar tracking system using light sensitive cells and a control circuit.

Applicant argues that Kravitz is a very complex assemblage of solar panels which would not be cost effective. However, this argument is not deemed to be persuasive because any additional features in Kravitz that are not recited in the instant claims are not excluded by the "comprising" language of the instant claims.

Applicant argues that Kravitz does not indicate that his solar panels may be mounted across a roof or other support. However, this argument is not deemed to be persuasive because a skilled artisan would mount Kravitz's solar panel unit where there

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is access to the sun.. The instant claims are silent as to any particular location for mounting.

Applicant argues that Kravitz does not disclose any form of tracking of the sun. However, this argument is not deemed to be persuasive because sun tracking is conventional in the art as shown by Feustel et al, Moore, Shibata et al, Phelan et al, and Regnier et al.

Applicant argues that "the complexity, manner of mounting, the distance between photocells 7 and tube 17, and a lack of any disclosure suggesting that the solar panels of Kravitz would and could follow the path of the sun through the sky to remain perpendicular therewith, makes Kravitz indeed remote from the claim subject matter of the present invention." However, this argument is not deemed to be persuasive because tracking the sun is conventional in the art. Indeed, even Murphy, which has photocells and tubes, teaches that its solar energy apparatus (61) can be continuously directed toward the sunlight during the daytime, i.e., kept essentially perpendicular to the rays of sun by adjusting position along horizontal axle (55), as well as rotating platform (37). Nothing unexpected has been demonstrated with respect to Kravitz or Murphy.

The Examiner has considered all of the case law cited by Applicant in response to the 102 and 103 rejections and maintains that all of the rejections above in the instant Office action are proper.

Conclusion

25. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

26. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 571-272-1338. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alan Diamond
Primary Examiner
Art Unit 1753

Alan Diamond
August 10, 2005

A handwritten signature in black ink, appearing to read 'Alan Diamond', with a stylized, cursive script.